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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,786	09/29/2003	Hideyuki Sakaida	Q77624	1053

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EXAMINER

PATEL, JAYESH A

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2624

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10/15/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/671,786	Applicant(s) SAKAIDA, HIDEYUKI	
	Examiner Jayesh A. Patel	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,4,11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) 1,2,5-10 and 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,4,11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. The amendments to claims dated 09/14/07 has been entered and made of record.
2. Claims 1-2,5-10,13-20 have been withdrawn.
3. In view of the amendments new grounds of rejections have been presented.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 3,4,11 and 12 (of the current application # 10671786) are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable

over Claims 1 and 2 of U.S. Patent No. 6704591(Sakaida) in view of Wilkins (US 6226353) hereafter Wilkins.

Regarding Claim 3 of the instant application, Sakaida at claim 1 discloses a method of restoring phase information on a radiation transmitted through an object on the basis of detection data obtained by detecting intensity of the radiation transmitted through the object, said method comprising the steps of: (a) obtaining plural sets of detection data respectively representing plural kinds of radiation image information on plural detection planes **(Col 11 Lines 53-60 Claim 1)**. Sakaida further discloses (b) obtaining a differential coefficient between said plural sets of detection data at **(Col 12 Lines 1-3)**;(c) calculating a Laplacian of phase on the basis of said differential coefficient and any one of said plural sets of detection data **(Col 12 Lines 9-10)**; and (d) performing inverse Laplacian computation on the Laplacian of phase to obtain the phase information in **(Col 12 Lines 11-13)**. Sakaida is silent and however does not disclose using a radiation having a predetermined wavelength with energy from 16keV to 30 keV to detect the intensity of the radiation on said plural detection planes.

Wilkins at **(Col 6 Lines 40)** discloses using a radiation having a predetermined wavelength with energy from 16keV to 30 keV to detect the intensity of the radiation on said plural detection planes. In order to detect the intensities of the radiation signals it is necessary to have some kind of energy having a predetermined wavelength, therefore it would have been obvious for

one of ordinary skill in the art, at the time the invention was made to have used the radiation (energy) of predetermined wavelength as taught by Wilkins in the method and apparatus of Sakaida for the above reasons.

Regarding Claim 4, Sakaida and Wilkins discloses a method according to claim 3. Sakaida further comprising the step of generating image data on the basis of the phase information obtained at step (d) in **(Col 12 Lines 11-13)** where after the step of applying the inverse laplacian the image is generated which is restored in phase.

Claim 11 is a corresponding apparatus claim of Claim 3. See the explanation of claim 3. Sakaida also discloses apparatus in Claim 2.

Claim 12 is a corresponding apparatus claim of Claim 4. See the explanation of claim 4.

Claims 3,4,11 and 12 (of the current application # 10671786) are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1 and 5 of U.S. Patent No. 7171031 (Sakaida) in view of Wilkins.

Regarding Claim 3 of the instant application, Sakaida at claim 1 discloses a method of restoring phase information on a radiation transmitted through an

object on the basis of detection data (image signal) obtained by detecting intensity of the radiation transmitted through the object, said method comprising the steps of: (a) obtaining plural sets of detection data respectively representing plural kinds of radiation image information on plural detection planes (**Col 18 Lines 27-39 Claim 1**). Sakaida further discloses (b) obtaining a differential coefficient between said plural sets of detection data at (**Col 18 Lines 40-44**); (c) calculating a Laplacian of phase on the basis of said differential coefficient and any one of said plural sets of detection data (**Col 18 Lines 45-47**); and (d) performing inverse Laplacian computation on the Laplacian of phase to obtain the phase information in (**Col 18 Lines 48-49**). Sakaida is silent and however does not disclose using a radiation having a predetermined wavelength with energy from 16keV to 30 keV to detect the intensity of the radiation on said plural detection planes.

Wilkins at (**Col 6 Lines 40**) discloses using a radiation having a predetermined wavelength with energy from 16keV to 30 keV to detect the intensity of the radiation on said plural detection planes. In order to detect the intensities of the radiation signals it is necessary to have some kind of energy having a predetermined wavelength, therefore it would have been obvious for one of ordinary skill in the art, at the time the invention was made to have used the radiation (energy) of predetermined wavelength as taught by Wilkins in the method and apparatus of Sakaida for the above reasons.

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Regarding Claim 4, Sakaida and Wilkins discloses a method according to claim 3. Sakaida further comprising the step of generating image data on the basis of the phase information obtained at step (d) in **(Col 18 Lines 48-49)** where after the step of applying the inverse laplacian the image is generated which is restored in phase.

Claim 11 is a corresponding apparatus Claim of Claim 3. see the explanation of claim 3. Sakaida also discloses apparatus in Claim 5.

Claim 12 is a corresponding apparatus claim of Claim 4. See the explanation of claim 4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3,4,11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkins (US 6226353) hereafter Wilkins in view of Toth et al. (US 5361291) hereafter Toth.

1. Regarding claim 1, Wilkins discloses a method of restoring phase information on a radiation transmitted through an object on the basis of detection data obtained by detecting intensity of the radiation transmitted through the object (**Fig 1,2**), said method comprising the steps of: (a) obtaining plural sets of detection data respectively representing plural kinds of radiation image information on plural detection planes (**Fig 2**) at different distances from the object (**Col 4 Lines 5-8 and Col 6 Lines 5-10**) by using a radiation having a predetermined wavelength with energy from 16 keV to 30 keV to detect intensity of the radiation on said plural detection planes (**Col 6 Lines 40**). Wilkins further discloses obtaining a differential transport of intensity equation at (**Col 7 Lines 46-52**), however is silent and does not disclose (b) obtaining a differential coefficient between said plural sets of detection data; so as to (c) calculating a Laplacian of phase on the basis of said differential coefficient and any one of said plural sets of detection data; and (d) performing inverse Laplacian computation on the Laplacian of phase to obtain the phase information.

Toth discloses (b) obtaining a differential coefficient between said plural sets of detection data so as to (c) calculating a Laplacian of phase on the basis of said differential coefficient and any one of said plural sets of detection data (**Fig 3,5, Col 7 Lines 1-7 where intensity signal 36 having difference in phase shown by curves 58 and 54**); and (d) performing inverse Laplacian computation on the Laplacian of phase to obtain the phase information (**Col 8 Lines 48-49**). Toth further discloses that the Laplace transformation is a

mathematical method of converting complex differential equations into more convenient algebraic equations at **(Col 7 Lines 8-11 and Col 8 Lines 38-42)**.

Both Wilkins and Toth are analogous art and are from the same field of endeavor, therefore it would have been obvious for one of ordinary skill in the art, at the time the invention was made to have used the laplace transform method in the method and apparatus as disclosed by Wilkins for the above reasons.

2. Regarding claim 4, Wilkins and Toth disclose a method according to claim 3. Toth further disclose comprising the step of generating image data on the basis of the phase data information obtained at step (d) at **(Col 8 lines 34-60 where the signal $x(t)$ is produced)**.

3. Claim 11 is a corresponding apparatus claim of the Claim 3. See the explanation of Claim 3.

4. Claim 12 is a corresponding apparatus claim of the Claim 4. See the explanation of Claim 4.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in

37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayesh A. Patel whose telephone number is 571-270-1227. The examiner can normally be reached on M-F 7.00am to 4.30 pm (5-4-9). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jayesh Patel

10/04/07

JP

JINGGE WU
SUPERVISORY PATENT EXAMINER

